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ಕನ್ನಡ ರಾಜ್ಯೋತ್ಸವದ

ದೀಪಾವಳಿಯ ಶುಭಾಶಯಗಳು ಸಾರ್ವಿಕ ಶುಭಾಶಯಗಳು



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DRUG INTERACTIONS



The drug interaction happens when a patient's response to a medicine is modified by nutritional supplements, environmental factors, food, formulation excipients, other medications or disease conditions. Interactions between (drug–drug interactions) drugs may be harmful or beneficial. 10–20% of the harmful drug–drug interactions are the cause for adverse drug reactions requiring hospitalization; hence these interactions are considered important as they can be avoided.

Elderly patients are especially vulnerable with a strong relationship between increasing age, the number of drugs prescribed and the frequency of potential drug–drug interactions. Knowing how drug–drug interactions occur and how to manage them is an important part of clinical practice. Types of drug–drug interactions Interactions between drugs may be categorised by the underlying mechanism:

- Behavioural drug–drug interactions occur when one drug alters the patient's behaviour to modify compliance with another drug. For example, a depressed patient taking an antidepressant may become more compliant with medication as symptoms improve.

- Pharmaceutical drug–drug interactions occur when the formulation of one drug is altered by another before it is administered. For example, precipitation of sodium thiopentone and vecuronium within an intravenous giving set.

- Pharmacokinetic drug–drug interactions occur when one drug changes the systemic concentration of another drug, altering 'how much' and for 'how long' it is present at the site of action.

- Pharmacodynamic drug–drug interactions occur when interacting drugs have either additive effects, in which case the overall effect is increased, or opposing effects, in which case the overall effect is decreased or even 'cancelled out' Clinical resources for drug–drug interactions A number of resources are available to help clinicians with drug–drug interactions:

- Individual drug monographs in formularies, such as the Medicines Handbook, are a useful starting point for learning about new drugs

- Prescribing and dispensing software mostly generates alerts from tables of information about drug pairs. The time involved and the amount of irrelevant information retrieved may cause 'alert fatigue' and limit their clinical utility.

- Drug information services have access to reference information such as Stockley's Drug Interactions and Micromedex.

Most potential drug interactions can be recognized by applying principles of clinical pharmacology and good

clinical care. Increased vigilance by clinicians at the time of changing drugs improves the chance of identifying unwanted drug interactions before they cause significant harm. Knowing a few drugs well and making judicious use of available information is more effective for managing drug interactions than relying Self-test solely on electronic decision support.

The mission of pharmacy practice is to help patients make the best use of their medication. This means providing safe, effective, timely, and cost-conscious therapy. From the safety viewpoint, the pharmacist has the legal duty to warn about potentially harmful drug interactions. The warning should be directed to the prescribing physician in a manner that will increase the chances of avoiding the drug interaction.

The enthusiasm to use new drugs may lead to DDIs that are yet to be identified. Adverse drug reactions may occur as the consequence of DDIs and clinicians may be unaware of the clinical risks of some drug combinations. Drug–drug interactions are a significant cause of hospital admissions and hospital visits, thereby contributing to a huge economic burden. Gathering more and more information on DDIs could help to reduce such adverse effects from DDIs. The drugs most commonly implicated in major potential interactions are those used in the day-to-day clinical management of elderly patients with chronic diseases.

It is not possible to remember all relevant drug–drug interactions or to look them up in reference manuals or computer databases due to time constraints in the clinical situation. However, one should memorise the more common and harmful drug–drug interactions, particularly those where one component has a small therapeutic window, as with warfarin, digoxin, tricyclic antidepressants, aminoglycosides, antiepileptic drugs such as phenytoin and carbamazepine, antiarrhythmics, AIDS drugs and ciclosporin.

Patients with co-morbidities, the elderly and those with impaired cardiac, liver or renal function should be assessed before a drug is prescribed or administered. If the pharmacist has time, a trustworthy reference source or medicine information centre can be consulted. Otherwise and in an emergency, pharmacokinetic reasoning can help. Knowledge of the chemical properties of similar drugs from the same class may allow some insight into absorption from or transport through the gastrointestinal tract, and whether metabolism might include enzyme induction or inhibition as well as competition for excretion via the kidneys. However, the conclusions drawn must be verified as soon as possible. Finally you must always ask yourself whether the effect could be caused by the drug itself—for example, a side effect, insufficient effect of the drug or disease breakthrough.

Some serious Drug – Drug Interactions

S. No	Drugs Involved	Effect of interaction
1.	Warfarin plus ciprofloxacin, clarithromycin, erythromycin, metronidazole or trimethoprim- sulfamethoxazole	Increased effect of warfarin and increased risk of bleeding
2.	Warfarin plus acetaminophen	Increased bleeding, increased INR
3.	Warfarin <i>plus</i> acetylsalicylic acid (aspirin)	Increased bleeding, increased INR
4.	Warfarin <i>plus</i> NSAID	Increased bleeding, increased INR
5.	Fluoroquinolone <i>plus</i> divalent/trivalent cations or sucralfate	Decreased absorption of fluoroquinolone
6.	Carbamazepine <i>plus</i> cimetidine, erythromycin, clarithromycin or fluconazole	Increased carbamazepine level
7.	Phenytoin <i>plus</i> cimetidine, erythromycin, clarithromycin or fluconazole	Increased phenytoin level
8.	Phenobarbital <i>plus</i> cimetidine, erythromycin, clarithromycin or fluconazole	Increased phenobarbital level
9.	Phenytoin <i>plus</i> rifampin	Decreased phenytoin levels
10.	Phenobarbital <i>plus</i> rifampin	Decreased phenobarbital levels
11.	Carbamazepine <i>plus</i> rifampin	Decreased carbamazepine levels
12.	Lithium <i>plus</i> NSAID or diuretic	Increased lithium levels
13.	Oral contraceptive pills <i>plus</i> rifampin	Decreased effectiveness of oral contraception
14.	Oral contraceptive pills <i>plus</i> antibiotics	Decreased effectiveness of oral contraception
15.	Oral contraceptive pills <i>plus</i> troglitazone	Decreased effectiveness of oral contraception
16.	Cisapride <i>plus</i> erythromycin, clarithromycin, fluconazole, itraconazole, ketoconazole, nefazodone, indinavir or ritonavir	Prolongation of QT interval along with arrhythmias secondary to inhibited cisapride metabolism
17.	Cisapride <i>plus</i> class IA or class III antiarrhythmic agents, tricyclic antidepressants or phenothiazine	Prolongation of QT interval along with arrhythmias
18.	Sildenafil <i>plus</i> nitrates	Dramatic hypotension
19.	Sildenafil <i>plus</i> cimetidine, erythromycin, itraconazole or ketoconazole	Increased sildenafil levels
20.	HMG-CoA reductase inhibitor <i>plus</i> niacin, gemfibrozil, erythromycin or itraconazole	Possible rhabdomyolysis

Some serious Drug – Food Interactions

S. No	Drugs Involved	Type of food	Effect of interaction
1.	Warfarin	High-protein diet	raise serum albumin levels, decrease in international normalized ratio (INR)
		Vegetables containing vitamin k	interferes with the effectiveness and safety of warfarin therapy.
		Charbroiled	decrease warfarin activity
		Cooked onions	increase warfarin activity
		Cranberry juice	elevated INR without bleeding in elderly patient
2.	Monoamine oxidases	Tyramine-containing food	hypertensive crisis
3.	Propranolol	Rich protein food	serum level may be increased
4.	Celiprolol	Orange juice	the intestinal absorption is inhibited
5.	Aces inhibitors	Empty stomach	absorption is increased
6.	Ca ² channel	Grape fruit juice	increases the bioavailability
7.	Antibiotics	with milk products	that complex with some antibiotics and prevent their absorption. reduced bioavailability
8.	Acetaminophen	Pectin	delays its absorption and onset
9.	NSAIDS	Alcohol	can increase risk of liver damage or stomach bleeding
		Beverages	the c_{max} and $auc_{0-\alpha}$ significantly increased
10.	Theophylline	High-fat meal and grape fruit juice	increase bioavailability
		Caffeine	increases the risk of drug toxicity
11.	Esomeprazole	High-fat meal	bioavailability was reduced
12.	Cimetidine, rupatadine	with food(any type)	increase bioavailability
13.	Isoniazide	Plantsmedicinal herbsoleanolic acid	exerts synergistic effect
14.	Cycloserine	High fat meals	decrease the serum concentration
15.	Esomeprazole	High-fat meal	bioavailability was reduced
16.	Cimetidine, rupatadine	with food(any type)	increase bioavailability
17.	Isoniazide	Plantsmedicinal herbsoleanolic acid	exerts synergistic effect
18.	Cycloserine	High fat meals	decrease the serum concentration
19.	Glimepiride	with breakfast	absolute bioavailability
20.	Acarbose,	at start of each meal	maximum effectiveness

Dr. A Pramod Kumar
Drug Safety Associate



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THE PHARMACIST AND 50 PLUS AGE PATIENTS

THE MIDLIFE CHALLENGE: THE 50 PLUS AGE GROUP PATIENTS

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50 plus age is a challenge era in a person's life. It is the start of strong visible signs of aging. The facial skin shows more prominent laugh lines, crow's nest and abdominal fat (particularly in omentum) increases, generally a sagging skin starts to show, hairline recedes and greying of hair on the head to varying extent starts to show. Internally, creaky joints, some amount of breathlessness on exertion (showing a decrease in stamina) and an increase of blood pressure start to happen. Socially, one starts to see loss in quality of life in peer group and even loss of life among one's acquaintances in the age group near about 50 years. 50 plus age groupers almost always need to slow down, take stock of their lifestyle and habits, and inculcate certain health-centric habits.

Scientific data and studies point to the requirement of including at least half hour of physical exercise; yoga and pranayama are established health boosters, and one needs to take medications if required, along with supportive nutraceuticals in this 50 plus age group.

Senescence is deterioration with age; cell repair weakens, cell renewal slows down and replacement of dying cells with new cells is slower. Cell damage is not only due to build-up of toxins in the body, but also a part of genetic heritage. Excess free radical builds up & causes damage to cell membrane and DNA; enzymes are also attacked by the free radical havoc, when there are excess free radicals in a tissue, the situation is described as oxidative stress. The build of tissue oxidative stress leads to diseases like asthma, diabetes, cardiovascular damage, brain damage and skin deterioration, thus there is health deterioration and aging. Antioxidants are substances that reduce excess free radical levels, they include: plant polyphenols (eg., curcumin and EGCG in green tea), carotenoids, vitamins A, E and C, and minerals zinc, selenium and copper. It is sagacious for the pharmacist to advise 50 plus age patients to take dietary supplements of antioxidants – by giving scientific information on free radical havoc. This counseling shall not only improve business yields in a pharmacy, this shall also help create patient (customer) satisfaction.

The recent tragic demise of power star Puneet (Lohit) Rajkumar on 29.10.2021 due to sudden death cardiac arrest points out the importance of taking care of health. Physical exercise needs to be done by closely listening to the body. Pranayama and yoga is beneficial and supports gym activity. Pharmacists need to counsel patients on the requirement to take adequate vitamins, minerals and hydration too. There are useful supporting liquid preparations that help hydrate with electrolyte support. Such products of sport nutrition

that shall support hydration and ion supplementation can be recommended to active sport personnel and gym goers. One interesting fact is heat illness (that can occur due to hot weather or extreme steam bath) causes loss of electrolytes, and a note to recollect is that the electrolytes – sodium and calcium are key to heart contraction and expansion. Abnormal heart beats happens due to abnormal electrical functioning in the heart, and a precipitating factor for the same is electrolyte imbalance (that can occur due to excess heat sauna and hot weather exposure).

Thus, in the 50 plus age groups, active citizens need to be counseled on the merits of sports nutrition and sports drinks that contain nourishing electrolytes. However, the patient should also seek counsel of other healthcare providers including the family physician.

The skin – largest organ of the body – starts to weaken; there is loss of moisture, tightness and elasticity in aging skin. Various skin dermocosmeceuticals are a repeat purchase opportunity for pharmacists to promote over the counter, to 50 plus aged patients. Knowledge of how the skin care product works can be highlighted using the pack insert and label. There are products that stimulate production of collagen in the skin. Various oils nourish and help moisten the skin. Application of such products shall help the patient become more confident and face social situations without inhibition and this makes the person productive.

Brain nourishment is not only through the electrolytes but also various known plant based nutraceuticals like brahmi that help boost mind functions: memory and cognition (thinking). Over the counter push to such products will improve the quality of life in the 50 plus aging group of consumers.

Based on empathy (having high listening index), wise pharmacists can suggest and promote products that shall benefit the 50 plus age group patients for overall zest and happiness. This aspect of providing scientific counsel will improve the stature of pharmacist and improve revenues of the pharmacy.

The National Pharmacy Week: NPW is celebrated by pharmacists every 3rd week of November, annually. The 2021 year theme is, Pharmacist: An Integral Part of Healthcare. To make this apparent, pharmacist counseling is a direct route to establish this fact. Targeting the 50 plus age group is just one strategy of counseling on the motto of NPW for 2021.



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INSPIRATIONAL PHARMACIST

Mary Munson Runge

[1928-2014]

Mary Munson Runge (1928–2014) was the first woman, African-American, and employee community pharmacist to be elected president of the American Pharmacists Association (APhA) overturning a 126-year reign of white men. On July 25, 1928, Mary Munson Runge was born in Donaldsonville, Louisiana. She was a Black pharmacist who also advocated for medical rights. Runge's father, John Harvey Lowery, was a pharmacist and physician who was renowned for establishing Donaldsonville's first pharmacy. Her father's devotion to the impoverished and marginalized spurred Mrs. Runge's desire to increase diversity in the membership ranks.

In 1948, Runge achieved her bachelor's degree in pharmacy from Xavier University of Louisiana. She was one of the few women practising pharmacy at the time. Runge relocated to California after graduating from college and spent 21 years working in a hospital pharmacy. She served at Sylvester Flower's Apothecary as a community pharmacist in 1971. The clinic was in Oakland, California, and it served underserved parts of the city.

Mary served as president of the California Pharmacists Association and the California Society of Hospital Pharmacists, among other positions in pharmaceutical organizations. In 1979, she became the first African-American woman to serve as President of the American Pharmacists Association (APhA). In 1978, she became the fourth honorary member of Kappa Epsilon. Mary has a long list of accolades and honors bestowed upon her.

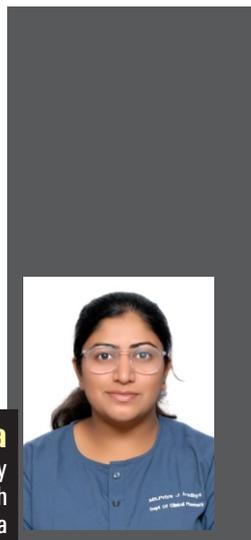
In acknowledgment of her contributions to the profession, Runge was awarded honorary doctorates from the Massachusetts College of Pharmacy (Doctor of Science) and Ohio Northern University (Doctor of Pharmacy). In 1978, the California Pharmacists Association nominated her as 'Pharmacist of the Year'. In 1997, Runge was inducted into the Hall of Fame of the California Pharmacists Association. She earned the Hugo H. Schaefer Award from the American Pharmacists Association in 1996.



She also worked as a part of several federal committees like the Institute of Medicine Pharmacy Advisory Panel that promoted the study of costs of educating healthcare professionals, National Academy of sciences in 1974, the Reagan-Bush Health Policy Advisory Committee in 1980, the U.S. Department of Health, Education, and Welfare, and the Prescription Drug Payment Review Commission.

Mary Munson Runge took the retirement from the pharmacy profession in 1994. On January 8, 2014, Mary Munson Runge demised. On Saturday, February 15, her memorial ceremony was conducted at the First United Methodist Church in Modesto, California.

Mary was committed to making a difference in the community and was willing to work hard to achieve her goals. She paved the way for others to follow in her footsteps. In honour and remembrance of Mary Munson Runge, the APhA Foundation has established an endowment scholarship. The grant/scholarship is given out annually to a meritorious APhA-ASP student member. Mary Munson Runge will always be regarded and remembered as an exemplar and role model for the profession, therefore the scholarship established in her honor will assist pave the way for future pharmacy leaders.



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Quiz

RULES

1. Correct answers will be rewarded 1 point each (10 marks)
2. Answer of the quiz will be evaluated by panel of judges and their decision is final. (Max mark:10)
3. Those who get the highest marks, their photo will be published in our next bulletin and also a cash prize of Rs.500/- will be rewarded to them
4. The answer must be sent within 20th November 2021 to this E Mail ID- krpaindia@gmail.com
5. A confirmation mail will be sent to you on receiving your e-mail.

1. **One pound apothecary is equivalent to:**
 - a. 7000 grains
 - b. 6375 grains
 - c. 5760 grains
 - d. 480 grains
2. **Ampoules generally contain:**
 - a. Single-dose parenteral product
 - b. Multiple-dose parenteral product
 - c. 3-4 doses
 - d. None of the above
3. **Which mill is used for size reduction of fibrous material?**
 - a. Roller mill
 - b. Hammer mill
 - c. Ball mill
 - d. Cutter mill
4. **Ball mill works on the principle of**
 - a. Impact
 - b. Compression
 - c. Attrition
 - d. Attrition and impact
5. **Micrometrics deals with the study of**
 - a. Powders
 - b. Micropores
 - c. Small particles
 - d. Metric system of measurements
6. **Belladonna tincture is prepared by percolation due to its**
 - a. Nature of drug
 - b. Therapeutic value of the drug
 - c. Chemical properties of constituents
 - d. None of these
7. **Which of these substance can be directly compressed into tablet?**
 - a. Paracetamol
 - b. Aspirin
 - c. Indomethacin
 - d. Salicylic acid
8. **Water attack test is used to identify the alkalinity in:**
 - a. Type I glass
 - b. Type II glass
 - c. Type III glass
 - d. All of these
9. **Saccharin sodium is used as Flavouring and Colouring agent. Is the statement True or False?**
 - a. True
 - b. False
10. **The solution of potassium permagnate is filtered through?**
 - a. Filter paper
 - b. Whatman Filter paper
 - c. Cotton wool
 - d. None of the above

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KRPA Quiz Competition

Dr. Rekha K Shetty
Sr. Medical Advisor



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